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Virginia's Wildlife and Related Natural Resources
and to the Betterment of
Outdoor Recreation in Virginia**

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COVER: Canada geese at dawn. Our artist: Duane Rayer, Cary, North Carolina.

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Full Circle

By JACK RANDOLPH

TRAPPING, one of the world's oldest professions, dates back to the dim past when man first appeared on earth.

Like all of our professions, trapping methods and tools have been refined through the years and the laws governing the use of traps have experienced similar refinements.

Early trappers followed their trade as a means of survival. Trapped animals represented a source of food, clothing and tools. Later, trapping became a money-making enterprise as trappers sought furbearers for their valuable pelts.

In recent years trapping has become a means of harvesting the annual surplus of fur from marshes and woodlands. Muskrat marshes have become recognized as valuable revenue-producing real estate, and they are managed to produce a large annual crop. Rural youngsters find trapping a lucrative source of additional cash in areas where winter part-time employment is almost non-existent.

Biologists view trapping as a means of maintaining a balance of the species. Seasons are carefully set and harvests strictly controlled to ensure that the fur yield is held to the annual harvestable surplus.

Since the end of World War II, fur prices have been low. Trappers have been hard pressed to find enough fur to make their efforts worthwhile. Few people work harder for a meager income than the trapper.

At best, trapping is an uncertain occupation. The trapper is always at the mercy of fluctuating fur prices and uncertain weather conditions. Flash floods or quick freezes followed by sudden thaws can tear away many of a man's traps. A trapper can work for days setting up his line, and a sudden freeze or a surprise snow can render most of his sets ineffective overnight. He must get out the next day and readjust his entire line, hoping that the weather will remain constant for at least a few days. He is on his line early in the morning, before his regular job or chores, or in the evening after school. If he's lucky, he'll spend his nights skinning and stretching fur.

Good trappers work at their profession many months out of the year. The early fall is spent afield looking for fur sign and planning the prospective trapline. Traps must be tended to. Experienced hands boil their traps in a darkening solution and wax them against rust and giving off odors offensive to animals. After the season, traps must be treated again to prevent rust in storage. Although trapping is always hard work and the pay is seldom good, trappers can't help but return to their lines year after year.

The primitive trapper of the Stone Age probably used the pitfall as his first trap. This was simply a pit

(Continued on page 24)

Road Blocks

SOME time ago when hunting in Rockingham County near Hall Spring, I saw road blocks made of metal tubes or pipes, hinged at one end and locked in a hollow metal post at the other end. Can anyone tell me where I can purchase these road blocks?

Alfred W. Spates
22 West Jefferson Street
Rockville, Maryland

From your description it appears that the "road blocks" you encountered are a type of gate which the Forest Service, the Park Service and the Game Commission have custom made for individual sites where it is necessary to prohibit or restrict vehicular traffic. These gates are not available as a stock item from any source we know of, but perhaps some reader may know where they may be obtained commercially and will share the information with you.—Ed.

Population Decline Basis for Canvasback Hunting Season Closure

THE Fish and Wildlife Service's recent closure of the canvasback duck hunting season across the nation was based on evidence that fall flights of this popular game bird had dropped from a range of 1-1/2 to 2 million in the late 1950's to fewer than 1 million canvasbacks now.

The Service has launched an expanded research program on canvasbacks to explore the possibility that declining habitat quality in certain key areas may be affecting the status of this important species. The possible effects of disease, pesticides, and other pollutants will be studied. Concern has been expressed that Hurricane Agnes may have affected food supplies for waterfowl wintering in the Chesapeake Bay area, the most important wintering area for canvasbacks on the Atlantic Coast.

Canvasbacks have a high natural annual mortality rate. The bird also has been plagued by decreased nesting success, particularly in the eastern part of the breeding range. Nest predation by raccoons, which have invaded the prairies in large numbers in recent years, may be partly responsible.

Some of the same difficulties are believed to be affecting redhead ducks. Redhead populations, although larger than those of canvasbacks, are at their low point in history following a precipitous three-year decline. In addition, redheads closely resemble canvasbacks, making it difficult for hunters to distinguish between the two species. Redheads may be hunted only in the Pacific flyway, where they are sufficiently segregated from canvasbacks and where many birds are produced from local breeding stocks.

Waterfowl population estimates are derived from aerial surveys of ducks and habitat conditions conducted each spring and summer by the Fish and Wildlife Service and the Canadian Wildlife Service. The regulation frameworks themselves are established by the Fish and Wildlife Service after consultation with state fish and game agencies, flyway councils, and major private conservation organizations.

ICICLE BASS

By PETE ELKINS

Lexington

WE finally located the fish off a brushy point in about fifteen feet of water. My partner Dick Rabun and I had launched his johnboat near Toler's Bridge on narrow Leesville Lake near Bedford. For almost an hour, our lures had gone untouched. We were both casting spinnerbaits with plastic worm tails, fishing them slow and deep.

My lure splashed down three feet from the point, and I allowed it to flutter toward the bottom. When the line went slack, indicating bottom, I raised the rod tip, nudging the spinnerbait back toward the boat. I fished the metal and plastic lure just like a bottom-bouncing plastic worm. Halfway to the boat, something happened, something gentle and almost indiscernible. Just for an instant the lure stopped with a strange plucking sensation as though a stunted bluegill had rapped the spinner. Unfortunately, my reaction was too slow as I set the hook into empty water.

I cast again. This time my senses were sharply tuned

Author Elkins lands an icicle bass that nipped a spinnerbait crawling along the bottom.



Spinnerbaits with plastic worm tails are the lure for frigid bass.

to the spinnerbait groping its flashing way along the soft bottom. Tap! There it was again! This time a bit stronger. The rod came back fast and high, accompanied by my grunt, as the hook bit deeply into bass.

There would have been nothing particularly unusual about this episode aside from the extraordinarily soft strike, except for the fact that the temperature was in the low forties and it was three days before Christmas!

Winter bass fishing is becoming more and more popular as fishermen learn the Southern bass remain relatively active until the severe weather of late winter slows the action. In Virginia, bass action continues "hot" until January, then picks up again in March.

Winter bass tend to bunch up on the bottom even more than they do during the summer heat. That fact makes them difficult to locate, but once located, the rewards are high and often heavy. Generally, bass will run heavier in the winter. Four pounders are not at all rare.

However, to catch four pounders, or one pounders, you've got to think *slow*. Cold winter water tends to reduce the metabolism of the cold-blooded largemouth



bass. Dick and I knew that, so we worked our lures slowly along the tangled bottom. We found that the strikes would be gentle taps down deep in the frigid water. Yet the strikes will still fool you, since they are much softer than the tap-tap of a warm-weather big-mouth testing a plastic worm. You'll probably miss many bass until becoming attuned to the subtle difference between the spinnerbaits' nudging a limb or rock and the tentative nip of an icicle bass.

Most cold-water fishermen swear by the spinnerbait, particularly when tipped with a four-inch piece of plastic worm. I've found green or white worms to be the most productive tail tantalizers.

Spinnerbaits are manufactured under a variety of trade names, including "Sure-Slayer," "Bushwhacker," "Wooly-Bully," "H & H," "Tarantula," and many others. They all share the slow-turning blade and fast-

ing to a dry pair when casting or handling bass wets one pair.

There are many small, safe heaters that are useful items on a winter bassboat. A zip-up suit or insulated overalls and boots take some of the bite out of the air. A ski-mask is as useful on a winter lake as on an alpine ski slope. The face-covering mask is at its best for those bone-chilling runs between lunker holes.

After catching my first December bass on Leesville, Dick and I went to work in earnest. Our lures flashed out over the pale green water. Down they sank, silver blades glinting in the green murk as they settled to the bottom. When you know for sure that bass are down there, your reflexes are well-tuned, so the next soft nudge resulted in a solid hookup.

The fish was big, well over four pounds of *Micropterus salmoides*. No wild summertime leaps now. Just

A set of insulated coveralls and a ski mask, like these worn by Ronnie Reynolds of Danville, make cold-weather bassing more comfortable.



sinking body required of a lure designed for the creeping techniques of winter bassing. Some fishermen are avid users of jig and rind combinations (especially for smallmouth) ; jig and plastic worm, usually black; and plastic worms à la summertime.

Generally, these lures should be sent to deep water haunts. I recommend steep dropoffs along rock cliffs. Any good "worm rod" and reel filled with ten to twenty pound mono makes a fine icicle rod. Obviously winter bassing presents certain problems as far as comfort is concerned. The bass are big, but the weather is often terrible! Line will freeze on your spool, ice will clog your rod guides, and you'll be cold. Swishing your rod through the water every few minutes solves the ice problem. Numb fingers can be alleviated somewhat by carrying several pairs of cotton gloves, chang-

a heavy surge, a green swirl on the top, then a stolid dive, boring deep in a half circle near the johnboat. But the rod did its work, and the bass was soon added to the stringer.

Leesville Reservoir is a narrow lake, roughly seventeen miles long, that has produced consistently good winter action over the past few years. There are few marinas on Leesville, but the Virginia Game Commission maintains several good launching ramps on the lake. Kerr Reservoir also produces good winter bassing, as will most deep lakes if you use *slow* methods.

If you're like I used to be, staring at the calendar throughout a cruel winter, impatient for the appearance of that magic time "spring," forsake your brooding ways. Go out and meet the icicle-bass set. The pace is slow. The rewards are heavy and delicious.

JUMP-SHOOT ON THE SHENANDOAH

By "BUNNY" HENSHAW
Charlottesville

In memory of "Bus Williamson"

THE picturesque beauty of our hunting ground that day was, in itself, more than ample justification for the trip. We were floating the Shenandoah where it loafs and slides and tumbles and roars along the base of the Massanutten mountain which towered above us in its majestic splendor of winter. The purplish overlay of naked trees, broken here and there by gigantic limestone bluffs and varied green patches of spruce, hemlock and pine, composed a picture that nature alone could produce.

A spring-like warm spell had once more lured us to our favorite haunt. So here we were with the ideal setup for a jump shoot. The weather was warm and inviting under a cloudless sky, and the farm ponds still being frozen over meant that every duck in that part of the country would be on the river.

Inland jump shooting is a far cry from coastal procedure. No club membership is necessary nor are any elaborate preparations. The rivers are public waterways, and the ducks are there for the hunting. You simply pick up and go when the spirit moves you. Sunny skies are perfect for the sport because you are going to the game rather than depending on blustery weather to drive it to you.

Having won the toss for first shot, I climbed aboard the front seat with "Bus" Williamson manning the stern.

Black duck rests in eddy near shore of fast flowing river.

Leonard Lee Rue photo



I liked to hunt with Bus. He was a staunch friend, wise to the ways of the wild, ready, able, and willing—the sort of guy you can start out with knowing full well that come what may the going will be pleasant. The many hours he spent in a canoe taught him to read the water ahead like a book and endowed him with the skill of a river rat. And skill is the order of the day on any jump shoot. You can't come down the river hitting rocks, logs, and things, sounding like a street-car with a flat wheel, and expect the ducks to wait around for you to get there so you can shoot them. The secret is to stick to the inside of the bends, hanging close to the bank where the ducks will flush "right under your feet" with the furor of a dozen grouse. Also, a good stern man keeps the shooter in position to take advantage of the shots offered him. It's pretty hard to do much in the way of slaying a duck who flushes while your head is rammed into a willow bush or something. Nor can you hope to sneak up on many while floating broadside down the middle of the river.

Settled comfortably up front with my gun poised for instant action, I'm sure I looked as invincible as a soldier on a park monument. Anyway, that's how I was feeling when my composure was disrupted by a blurred blast of confusion as a mallard drake, with a neck about a yard long, came boiling out from behind a log no more than ten feet in front of the canoe. My one and only shot blew a slab of bark the size of my hand off a large sycamore behind which the duck disappeared, headed for parts unknown, to be gone out of our lives forever. Of course I had to listen to a lot of cheap chatter from Bus as he beached the canoe in order to swap seats. It was then that I found myself wondering whether I was so crazy about hunting with that windbag after all.

We took off again, this time with Bus up front for it was now his turn to shoot. As I eased the canoe along as close as it would go to the bushes without actually touching them, I'm afraid I was secretly pulling for him to blow a double right out over the open water. This he had a chance to do when a pair of blacks came grinding out of the bushes and headed across the river. But Bus didn't blow it. Two well placed shots tumbled them to the water, and he looked back at me with a smirk on his face that I shall long remember. I was now losing my enthusiasm for hunting with him by leaps and bounds. But I was a good enough



Commission photo by Kesteloo

We put up a lot of ducks, most of them out of range.

sport to force a smile as I chided him for wasting shells on a couple of ducks that he could just as easily have caught in his hat.

So it was up front for me again, filled with firm resolutions to redeem myself if life around Williamson was ever to be worth living again.

We hadn't gone very far before what appeared to be a snowball out in the middle of the river proclaimed to us that a bufflehead drake was on the prowl. Buffleheads are sort of dumb and trusting and generally accommodate you by flying back upstream about three feet above the water when flushed. This one followed standard procedure, and I added him to our bag as he passed the canoe. But there was no redemption in that shot. I had been amply forewarned, and the whole procedure was too deliberate. I had dreamed of something spectacular, like a triple out of a flock of mixed blacks and mallards where I would pick my shots to fill my limit of two of one and one of the other. But dreams have a bad habit of not coming true, and I was denied this opportunity of proving my prowess.

Bus missed a fairly long shot at a baldpate, thereby putting me up front again. Coming down some fast but smooth water among a group of islands, we surprised a lone Canada goose. He had gotten careless while grazing and let us catch him with his head down. I have noticed many times that geese seem to feel free from enemy attack while on an island. His frantic take-off was impressive but futile, and he wound up in the canoe with us. I tossed him among the ducks with an air of supreme nonchalance but must admit that I evaded any chance of meeting eye to eye with Bus lest I too be guilty of a self satisfied smirk.

We continued on our way putting up a lot of ducks. Most were out of range but enough offered legitimate shots so that with a miss here and a hit there we had

filled our limits by the time we reached Rabbit Island. Along the way I made an outstanding snap shot at a woodie that flushed in a thicket along the edge of a fast rough race. I didn't bother to mention to Bus that the canoe had actually hit a rock and caused my gun to go off before I was ready to shoot.

Rabbit Island earned its name from the fact that we rarely stopped there without jumping a rabbit from under the driftwood with which it is strewn. It isn't actually an island except during extremely high water. But it is an ideal spot for lunch and a rest break. This rather long peninsula projects out into the river in an upstream direction. Thus, a slough of quiet water quite like a small pond lies on the upper side, made to order for a decoy spread. The trunk of an enormous tree deposited there by some long forgotten flood serves perfectly as a blind on these occasions. However, this time we had no need for the decoys as we had already filled our limits. Using the tree as a backrest, we sat on the seat cushions and enjoyed lunch while relaxing in the sun. We had been under right



Leonard Lee Rue photo

Shooting over decoys is different on a mountain river. Often the ducks seem to appear right out of thin air over your spread.

much stress navigating a lot of rough, tricky water, so this was truly a welcome break.

As we lunched and soaked up sunshine, we talked of the times when we had put out decoys here and floated Mickey Mouse balloons downstream to flush the ducks below. Few hunters seem to know of this trick, which works to perfection. Most ducks frown on allowing any strange apparition to get but so close to them before taking to the air as a matter of routine precaution. When they spot decoys resting peacefully in a slough, they feel that here for sure is a haven of

safety. And with Bus and me behind the guns, this was quite often the case. It's the lead and not the noise that puts the meat in the pot. But we burned a lot of powder and spent many pleasantly remembered hours behind the remains of that ancient tree. This thing of shooting over decoys on a mountain river is also vastly different from that on the coast. Ridges, river bends and trees go far toward screening approaching ducks from view. Every now and then the swish of wings will warn you of their approach but generally they just appear out of thin air right over your spread. They also have an unsatisfactory habit of showing up when least expected. Naturally this undesirable trait runs up the ammunition cost per duck considerably.

Having eaten and rested with time to spare we decided to try to walk up a covey of birds. We knew of one which hung around a dilapidated old tenant's house not too far away. The fact that we had no dog didn't matter. It was just such a beautiful day we didn't want to waste a minute of it. Sure enough, the birds were there, and we each got one on the rise as the covey headed across the river to the safety of a honeysuckle and greenbrier thicket. This, of course, ruled out following them up so we returned to the canoe.

After lashing our guns to the thwarts as insurance against loss in the event of sudden disaster, we donned life jackets and shoved off into a long stretch of very fast, rough water. This section, which is known locally as "Dead Man's Gulch," came by its name honestly. Some three or four unfortunate voyageurs have fallen victim to its fury in comparatively recent years.

There could have been no thought of shooting even if we had wanted to now. Both of us had our hands full handling the canoe. An accurate count was out of the question, but we mutually agreed later that we had put up at least two dozen ducks, one and two at a time, who were resting in the slack water against the downstream side of many of the boulders we dodged on the way down. Although we never touched a gun during this run, it was actually the highlight of the trip. Here truly was nature in the raw. Angry white water, roaring like a train, taxing our ability to the utmost, and ducks flushing around us like a scattered covey of quail. No sultan's emeralds could ever rival the beauty of the green heads of those mallards sparkling in that brilliant winter sunshine. It was the ride of a lifetime. In over fifty years of hunting on two continents, I have never experienced anything to equal it.

Here, then, is where I should recall that after having returned to camp, hung our game on the peg, and shed our boots, Bus stuck out his hand with a smile and said, "Memories are made of days like this."

Man's Way—Woman's Dismay

By BOBBYE FENTRESS

Virginia Beach

MEN. They're a study in contradictions.

The same man who almost faints at the sight of his child's bloody nose will field dress a deer, skin a rabbit or pluck a duck without batting an eye.

The one who backs his car down the block to visit a neighbor will walk 20 miles through a pea patch kicking out bunnies or 40 miles behind a brace of pointers cutting up a sedge field.

Pity the little woman who must beat pans together to rouse her man for work. Then hears him up before the cock crows on opening day of duck season.

Then there's the guy who threatens a heat stroke after one hour on a family beach picnic. He's the same fellow that fishes from sunup to sundown for Charlie the Tuna. This one returns home with third degree burns from an overdose of Old Sol and smelling like a walking fish market.

There hasn't been a spare minute to build that sorely needed trash can rack. But he can whip up a half-submerged duck blind at the drop of a hunting hat. And the entire project is done under less than perfect conditions—like gale winds, a bucking nor'easter and from a rocking rowboat.

Some poor guys have such back problems that they can't even help rearrange the furniture. Wouldn't you know he's the one who hooks Moby Dick II—and lands him?

He who refuses to go out to a movie on Friday night because it drizzles does a rain dance on Saturday morning. Then goes looking for geese in water up to his waist or flounders through a muck-mired swamp because he's entranced by the chop or baying of his favorite Black and Tan.

A lucky wife's husband will wait 20 minutes for her to pick out a dress, coat and accessories. That same man will sit holding a pole with a string dangling in the water until he has barnacles on his hull or his seat grows to a fighting chair. To boot, the boat has probably been battling four-foot seas all day.

Consider the man whose jewelry case so resembles a grab bag that he hasn't worn matching cuff links in years. His tackle box would put Heloise to shame. Can you imagine worms, flies and feathers in alphabetical order?

Not that I have a thing against men, you understand. I doubt anything will ever replace them. It's just that promises made in haste are seldom fulfilled.

So if any gal's being given the grand rush down the aisle, she shouldn't be fooled by his eagerness to promise her, "I do."

'Cause after all's said and done, he don't.



SQUIRREL MAN

By BILL WEEKES
Spartanburg, South Carolina

SQUIRRELS are ornery critters, and Sam Montgomery, who hails from a place where coyotes howl and spunky dogies are hog-tied and branded, ought to know an ornery critter when he sees one.

Day by day, for most of this year, Texas Sam moseys down a lonesome trail to the "ole corral" to check on his critters. He's usually rustled up some grub for them, and this time is no exception. As he approaches the cages, bucket in one hand and bag in the other, the shy critters are heard to scatter metallicly—dashing for safety—and to chatter, perhaps, in translation, to the tune of "Don't Fence Me In."

Sam built these cages—eight big ones ($6 \times 9 \times 6$) and half a dozen small ones ($2 \times 2 \times 2$)—back in the summer of '71. In each big cage Sam fashioned tree branches which lead to each of four squirrel nest boxes, also built by this native of Sherman, Texas. The branches Sam rounded up from the trees of Center Woods, wherein the cages reside.

Ordinarily, Sam, an M.S. candidate in wildlife management at VPI & SU, moves from cage to cage depositing pellets and water in each.

"I feed 'em every day *ad lib*," he commented. "I'll put enough in the cages for them to eat whenever they

wish, and I always weigh what they finally do eat each day. I also fill up their bowls with water. Wild squirrels don't need as much free water because they eat succulent matter."

On this day, however, is added another task—the weighing of his critters. He does this once every two weeks, and knows how much his 20 squirrels have eaten and how much they have weighed, at two-week intervals, since the beginning of the year.

"My squirrels weigh anywhere from 500 to 630 grams," recounts Sam in his slight North of the Border drawl. "Their weights, in the wild, are fairly stable from May to August. After the first of the year, they'll lose a great deal after the mast is taken up, but gain it back slightly with the spring flush and level out in the summer some. But the big gain is when the fall mast comes in."

Sam carefully records the weight of each critter with the appropriate date. Each animal is identified by an ear tag number.

Sam "rode" into town (Blacksburg) a couple years ago, entering the graduate program in the Department of Forestry and Wildlife Service, and is now studying the energy dynamics of a woodlot gray squirrel population. He seeks to determine the amount of energy required to maintain a woodlot gray squirrel population and how the population uses the energy flow in the woodlot.

From the fall of 1971, until last July, Montgomery trapped, retrapped and released critters at the eight-acre North Crumpacker Woods so as to get seasonal population estimates (using various cumulative-index calculations). He also recorded each individual's sex, age and weight.

During this work, Sam found gray squirrels are harder to trap in the fall and easiest to capture in the summer. During 27-day trapping periods, each in the fall, winter and spring, Sam trapped and retrapped squirrels 68, 55, and 121 times, respectively. Of course, in the fall, when there is plenty of mast, squirrels are less apt to consider Sam's corn a rare delicacy. Therefore, relatively few take the bait. Even fewer critters take to the bait in the winter.

(next page)

"Part of this may be due to bad weather," opined Montgomery, "but there's still quite a bit of red oak mast on the ground and I've seen in the snow where squirrels have dug holes as deep as a foot-and-a-half to get buried acorns. They must have smelled these acorns, or perhaps they remembered where they buried them."

Sam says that by spring, by the time the remaining mast has rotted, squirrels are forced to eat less preferred buds and flowers, so that when they detect corn in the traps, they are more eager to enter them.

During the summer squirrels are confronted by much herbaceous material, and berries are a favorite. But apparently corn is even more of a delicacy. During a ten-day trapping venture last summer, Sam corralled and re-corralled these critters 268 times! One summer's day, he "roped in" as many as 41 squirrels and on another he captured—in four different traps—two squirrels at once.

Sam carefully records weight of food he is going to feed his squirrels.



"If I hadn't had a witness, I wouldn't even be saying such a thing," Sam said, perhaps cognizant of a Texan's reputation for telling tall tales.

Not only has Sam tried to put a handle (not Pan-handle) on how many mouths there are to feed at North Crumpacker, but he has also taken stock of the grub therein. From 335 food plots, Montgomery has measured mast abundance, counted oak flowers and buds, and has estimated the quantity of herbaceous material—all an effort at evaluating the standing crop of energy available there to the squirrel population



His squirrels do not like being caged, and they let him know it.

throughout the year.

Meanwhile back at Central Woods, Sam is assuming, in his study, that the amount of food the squirrel eats in captivity will be the same as the amount he eats in the wild. This is a reason he feeds his squirrels as much as they need each day. Eventually he will compare the food consumption of his squirrels at Center Woods with what food is available at North Crumpacker, thereby determining whether there is enough energy available for the squirrel population there.

"I've often thought a good study would be to relate the number of young squirrels produced in the spring to the amount of mast available the previous fall," Montgomery remarked. "It would be nice to be able to say that so many pounds of mast per acre would equal so many young squirrels per acre. I guess this would be sort of an intuitive conclusion, but there haven't been any quantitative studies done on this."

On days Sam weighs his critters, he totes an old burlap bag with him. Before entering each cage, he sticks a pole through it, rapping on the squirrel boxes to find out in which ones his critters are hiding out. He keeps two squirrels in each cage. A couple of the boxes contain nesting material and Sam wants the squirrels out of these boxes and into clean boxes. It's easier to transfer them from clean boxes into the small wire containers he devised for holding his critters while they are being weighed. Disturbed, squirrels shoot out of nest boxes as fast as oil gushing out of a derrick in Sam's native Grayson County. When he gets a critter into a clean box, Sam stuffs the mouth of the bag over the hole, takes the box down and fits his wire container over another open section of the bag and begins coaxing his critters to leave the darkness for the daylight.

Sam finds his critters the orneriest just about this time. Ideally the squirrel will move out of the box, through the burlap bag and into the wire container.

"Each squirrel's an individual," Sam relates. "Some will shoot out of the box and into the holder as easy as can be. Some you have to coax and coax."

Critters don't like to be confined in Sam's contraption, and they let him know about it with growls, whines and gnashing of teeth against metal. When trying to transfer a recalcitrant critter, Sam has had to resort to a little bushwhacking—that is, shoving a clothes-hanger wire through a crack in the box. The frustration is enough, at times, to make a Texan evoke verbiage not likely to be found on the pages of a Zane Grey novel.

Sometimes Sam forgets to replace a squirrel box after he has released a squirrel from the wire contraption. The creature will tear out of its miniature jail, rush up a branch like it had gold fever, and then stop, bewildered, staring at the spot where his old homestead used to be.

At times, squirrels, when trapped or released for the first time into a cage, become so hyperactive, or excited, and use up so much energy, they will go into shock. Sam noticed one of his critters feeling poorly one day. It lay very still, but Sam noticed faint signs

The squirrels are at their orneriest when it is time to get them out of their nesting boxes for weighing.



of breathing. He gave it a shot of glucose and the animal recovered.

"I know of one grad student who found what he thought was a dead squirrel in one of his traps," Sam recalls. "He put it on the front seat of his car to take it to the lab. While enroute, the sun coming through the front window heated up the squirrel and it was up and about before the grad student got to where he was going."

Montgomery, a sandy-haired young man with sideburns, hankers to be a game biologist after the sun sets on his studies at VPI & SU. He feels strongly about the problems of the environment.

"I believe more tax money ought to be spent to alleviate the environmental mess we're in," he says. "The people created the problem just as much as industry, and I feel we should contribute more money than



Sam gives his squirrels all they will eat, and calculates the amount they actually consume.

we are in strengthening a clean-up program. It's not a fad, but a serious problem."

He feels the biggest contribution wildlife management performs for the environment is habitat manipulation, which results in producing an environment wherein wild animals can find the food and cover necessary to live and to reproduce successfully.

"We need more fertile land for wildlife," he concludes. "This need is often overlooked. Usually management areas are waste areas. You need good fertile land to produce wildlife, just like you need it to produce crops. It would also make wildlife management a lot cheaper to operate."

The Ten Commandments

By BILL ANDERSON
Grundy

THE ten commandments of gun safety—if each of us obeyed them, shooting accidents would be nearly impossible. Although repeated thousands of times, these ten safety rules can always bear repeating again. We are never too old, or too young, to be reminded of good shooting practices.

Treat every gun with the respect due a loaded gun. How often we have seen someone point a gun toward an automobile or some other object and squeeze the trigger! Often, the excuse in an accidental shooting is, "I thought it wasn't loaded." As a lad, I once picked up my scattergun, pointed it at a wall and started pulling the trigger. When the pull was half through, I suddenly stopped. I just stopped; I don't know why. I opened the action of my gun and a shell flew out—a fully loaded shell! To this day I don't know how that gun got loaded; it had been stored for weeks. Enough said!

Watch that muzzle. A gun of any type or caliber should always be pointed in a safe direction. Keep the safety on until you are ready to shoot. But remember, almost all shotgun and rifle safeties block only the trigger and not the firing pin. A gun with a very light trigger pull is especially prone to firing when dropped or struck. I have also seen guns discharge when the bolt was being closed to chamber a cartridge. When firing on a shooting range, keep the gun pointed down-range. Always keep that muzzle pointed in a safe direction.

Unload guns when not in use. Actions should always be open when firearms are not in use. No one need ever carry a loaded gun into a building, tent, or trailer. Always be sure your gun is empty before placing it in your automobile. Never touch another shooter's firearm without his permission; then check it immediately to ascertain if it is loaded or not. In fact, check any gun you pick up to see if it is loaded; not just a casual glance, check it thoroughly.

Be sure the barrel is clear of obstructions. The shooter should be sure that he has ammunition only of the caliber or gauge that his gun shoots. Never mix ammunition in your pocket, vest or shell box. A twenty gauge shell, unknowingly dropped into a twelve gauge barrel, will prove disastrous when a shell of the proper size is fired. Color coding of shells is an excellent idea. Many guns have been ruined because a patch, insect's nest, stick, or mud was not removed from the barrel. Always check the bore, with gun empty and action open, to be sure it is clear. A piece of tape over the end of the muzzle, on the outside of the barrel, keeps

out foreign material when afield and shoots off harmlessly when game is spotted.

Be sure of your target before you shoot. Be intimately familiar with the identity of the game you are seeking. See the whole animal and be sure it is not a dead animal being carried or dragged by another hunter. The shooter should know where his bullet is going if he misses his target. There may be another hunter just beyond. A hunter was slowly making his way through the September squirrel woods in pursuit of game when he spotted a gray on a small tree branch. He blasted away with his shotgun, the squirrel fell, but then he heard someone scream just beyond a screen of brush. He had shot another hunter, not seriously, but it could have been another tragic death.

Never point a gun at anything you don't want to shoot. A young man picked up a revolver, placed it against his hand, pulled the trigger, and the bullet ripped through his hand and into a companion's side. A boy of twelve was swinging his .22 caliber rifle in a haphazard manner when it somehow discharged. The bullet crashed through a window hitting an acquaintance of mine in the chest. The shooter should never, but never, point his gun, loaded or empty, at anything he does not intend to shoot.

Never climb a tree or fence or jump a ditch with a gun, and never pull a gun toward you by the muzzle. Always lay your gun down, or hand it to a companion before climbing a fence or tree or jumping over any obstruction. Handle your gun, always, with the muzzle pointed in a safe direction and under complete control.

Never shoot a bullet at a flat, hard surface or water. A bullet fired on an angle and hitting water or any other hard surface may ricochet at almost the same velocity at which it struck. A bullet fired against a solid object at a ninety degree angle may disintegrate, spraying bits of metal in all directions. This can cause painful injury or even loss of sight. The shooter needs not only to be sure of his target but also of his backstop.

Store guns and ammunition separately and beyond the reach of children. All firearms should be locked in a gun cabinet or out of sight of the casual observer. Ammunition should be in another part of the house on a high shelf or under lock and key. Too many people have little knowledge of guns and therefore know nothing of safe handling practices.

Avoid alcoholic beverages before or during shooting. Anyone hung over from the night before or with a bottle in his pocket has no more business using firearms than he does driving the family car.

The foregoing rules should be strictly observed. We owe it not only to ourselves and our fellow shooters for safety's sake, but each shooting mishap adds fuel to the fire kindled by the anti-gun and anti-hunting groups. Shoot and enjoy it, but before taking up your gun take just a moment to think.

VIRGINIA WILDLIFE

CONSERVATIONGRAM

Commission Activities and Late Wildlife News . . . At A Glance

BROOKS MILL LANDING CLOSED. The Game Commission has closed Brooks Mill Landing on Smith Mountain Lake because it was unusable and irreparable. The launching point located on the Blackwater River arm near Brooks Mill Bridge on Route 834 was completed in 1965. Through siltation the end of the ramp and the entire river bank in the area has been covered until the water is only a few inches deep. Thus, the ramp has been unusable for some time, but has caused some inconvenience to persons inadvertently trying to use it. Dredging to clear the ramp would be more costly than relocating it at a better site, and would be only a temporary solution since adjacent silt deposits would fill it back in within a year or less. Game Commission officials are looking into a site nearby.

THREE MILLION MORE HUNT AND FISH. Some 36 million Americans were found to participate in hunting and fishing during 1970, about 3 million more than participated five years previously, according to the results of the 1970 National Survey of Hunting and Fishing just released by the U.S. Department of the Interior. The number of fishermen increased 17% while the number of hunters grew by only 5.5%. At the same time expenditures increased by 70% and 90% respectively, indicating that it cost nearly twice as much to hunt or fish as it did 5 years ago. Purchase of auxiliary equipment along with food, lodging and transportation consumed over half of the sportsman's dollar. Guides, bait, etc., accounted for another 27.9%. License fees accounted for only 2.6%, down almost 1 whole percent over 5 years ago indicating that license fees are not keeping pace with rising cost.

The report indicates that the average freshwater fishing trip cost \$6.30 per day while saltwater expeditions averaged \$10.77 per day. Duck hunters spent \$9.73 per day, small game trips averaged \$.62, while big game hunting required \$17.27 per day. On an annual basis, expenditures ranged from a low of \$81 per person for the small game hunter to \$129 for the saltwater fisherman with all other groups falling between.

One out of every three men and one of each nine women fish while hunters number one in five among men and one in each 94 women. This is very little different from the ratios five or even 10 years ago as indicated by past surveys.

Of all U.S. households, 34 percent contained fishermen and 18 percent contained hunters. Fishermen 65 years of age and over represented about 5% of the fishing public. The percentage of the public who fished ranged from 25% in rural areas to 12.3% in big cities. With hunting the difference was even more pronounced with 13.3% of rural residents participating while only 3.7% of those from the big cities hunted.

Fishing provided 706,187,000 recreation days while hunting provided 203,689,000 days of outdoor recreation. Freshwater fishing accounted for over 80% of the total. Virginia big game hunters alone brought home 1,906,605 pounds of deer meat valued at \$1,620,614.

Wildlife also provided 411,371,000 recreation days for bird watchers, 37,828,000 days for wildlife photographers, and 337,092,000 recreation days for general nature lovers, many of whom were also hunters and fishermen.

Some interesting results were obtained by correlating participation in hunting and fishing with family income. Very few persons with incomes below \$4,000 hunt waterfowl or fish in salt water. A good percentage of low income persons enjoy freshwater fishing and a limited amount of small game and big game hunting. The majority of the poorer anglers fish in rivers and streams while most of the more affluent seek out man-made reservoirs and natural lakes. Some 65% of all hunting took place on private lands. Public lands seemed to serve poor and rich equally well.

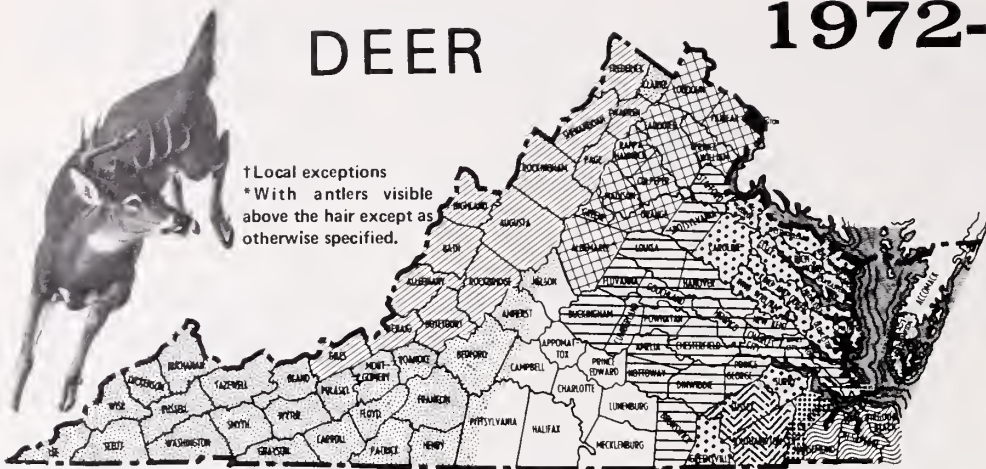
DEER

1972-73 HUNTING

Bag Limit—One per license year

November 13 - December 2

† Local exceptions
* With antlers visible
above the hair except as
otherwise specified.



PHEASANT — November 13-18

BAG LIMIT — One cock Bird per day.
Two per license year.

Birds must be carried to the nearest checking station where an official pheasant tag will be attached. (This is an experimental season to determine distribution and establishment of these game birds so accurate reporting of kills is extremely important)

November 6 - January 5 - One deer* per license year, either sex on the last day only. In Alleghany, Augusta, Bath, Botetourt, Craig, Frederick, Giles, Highland, Page, Rockbridge, Rockingham, Shenandoah and Warren Counties.

October 2 - November 30 - One deer* per license year, either sex on the last day only. In Albemarle, Culpeper, Fairfax, Fauquier, Greene, Loudoun, Madison, Orange, Prince William, and Rappahannock Counties.

November 10 - January 5 - One deer* per license year, either sex on the last day only. In Accomack, Amherst east of Route 29, Appomattox, Campbell east of the Southern Railroad, Charlotte, Halifax, Lunenburg, Mathews, Mecklenburg, Nelson east of Route 151, Pittsylvania east of the Southern Railroad and Prince Edward Counties.

November 20 - December 2 — One deer* per license year, bucks only. In Amherst west of U.S. Route 29, Bland, Bedford, Buchanan, Campbell west of the Southern Railroad, Carroll, Clarke, Dickenson, Floyd, Franklin, Grayson, Henry, Lee, Montgomery, Nelson west of Route 151, Northampton, Patrick, Pittsylvania west of the Southern Railroad, Pulaski, Roanoke, Russell, Scott, Smyth, Tazewell, Washington, Wise, and Wythe Counties.

November 20 - December 2 — One deer* per license year, either sex on the last day only. In Alleghany, Augusta, Bath, Botetourt, Craig, Frederick, Giles, Highland, Page, Rockbridge, Rockingham, Shenandoah and Warren Counties.

November 20 - January 5—Two deer* per license year, one of which may be antlerless on the last day only. In Albemarle, Culpeper, Fairfax, Fauquier, Greene, Loudoun, Madison, Orange, Prince William, and Rappahannock Counties.

November 20 - January 5—Two deer* per license year, one of which may be antlerless on the last 12 hunting days only. In Caroline, Essex, Gloucester, Greenville, King George, King and Queen, King William, Lancaster, Middlesex, Northumberland, Richmond, Surry and Westmoreland Counties.

November 20 - January 5—Two deer* per license year, bucks only. In Accomack, Amherst east of Route 29, Appomattox, Campbell east of the Southern Railroad, Charlotte, Halifax, Lunenburg, Mathews, Mecklenburg, Nelson east of Route 151, Pittsylvania east of the Southern Railroad and Prince Edward Counties.

November 20 - January 5—Two deer* per license year, one of which may be antlerless on the last 3 hunting days only. In Amelia, Brunswick, Buckingham, Charles City, Chesterfield, Cumberland, Dinwiddie, Fluvanna, Goochland, Hanover, Henrico, James City, Louisa, New Kent, Nottoway, Powhatan, Prince George, Spotsylvania, Stafford, and York Counties, plus Hampton and Newport News Cities.

October 2 - November 30—Two deer* per license year, bucks only. In Virginia Beach and Chesapeake Cities and that portion of Nansemond County lying east of the Dismal Swamp Line.

November 10 - January 5—Two deer per license year, one of which may be antlerless on the last 12 hunting days. In Isle of Wight and that portion of Nansemond County lying west of the Dismal Swamp line.

November 20 - January 5—Two deer*—per license year, one of which may be antlerless. In Sussex and Southampton Counties.

GROUSE

November 13 - February 15 —
Statewide - Bag limit 3 per
day; 15 per license year.



QUAIL

November 13 - February 15 —
Statewide - Bag limit 8 per
day; 125 per license year.



RABBIT

November 13 - January 31 —
Statewide - Bag limit 6 per
day; 75 per license year.



RACCOON AND BOBCAT



September 1 - March 31. In Accomack, Amelia, Amherst east of Route 29, Brunswick, Buckingham, Campbell, Caroline, Charles City, Charlotte, Chesapeake City, Chesterfield, Culpeper, Cumberland, Dinwiddie, Essex, Fluvanna, Gloucester, Goochland, Greenville, Halifax, Hampton City, Hanover, Henrico, Isle of Wight, James City, King George, King and Queen, King William, Lancaster, Louisa, Lunenburg, Mathews, Mecklenburg, Middlesex, Nansemond, Nelson east of Route 151, New Kent, Newport News City, Northampton, Northumberland, Nottoway, Orange, Powhatan, Prince Edward, Prince George, Richmond, Southampton, Spotsylvania, Surry, Sussex, Virginia Beach City, Westmoreland, and York Counties.

Cl...
west of
Greene,
Patrick,
Essex
Cl...
Bland, B...
Grayson,
Smyth,
RACCOON

REGULATIONS

License year at least 100 pounds live weight.

31 - Statewide except as listed below.



and, Giles, Grayson, Montgomery, Pulaski, Russell, Smyth, and Shenandoah. (Dogs not permitted from November 20 - December 31.)

the Dismal Swamp including all of Virginia Beach and Nansemond County lying east of the Dismal Swamp Line

side of Wight and that portion of Nansemond County lying west of the Dismal Swamp Line (see map).

ON NATIONAL FORESTS COMMISSION OWNED LANDS

West of the Blue Ridge - November 6 - January 5.

East of the Blue Ridge - November 20 - January 31.

BAG LIMIT 2 per day on National Forest



October 2 - March 10 In Albemarle, Amherst, Appomattox, Fairfax, Fauquier, Franklin, Loudoun, Madison, Nelson west of Route 151, Prince William, Rappahannock and Stafford

October 16 - January 31 In Alleghany, Bedford, Buchanan, Carroll, Craig, Dickenson, Floyd, Giles, Montgomery, Pulaski, Roanoke, Russell, Scott, Shenandoah, Smyth, Tazewell, Washington, Wise and Wythe Counties. BAG LIMIT 1 A DAY (1 a day, 3 a license year in Scott).

TURKEY

**BAG LIMIT
ONE PER DAY**
Three per license year,
no more than two of
which may be taken in
the fall, and no more
than two of which may
be hens (where legal).



SPRING GOBBLER SEASON

April 14 - May 12 In all counties except Lee.

Bearded Turkeys Only
One Half Hour Before Sunrise
until 11 A.M. Each Day

Turkeys are to be hunted with non-electronic callers. Dogs and organized drives are prohibited.

FALL SEASONS

November 13 - December 31 In Alleghany*, Augusta, Bath*, Botetourt, Craig, Frederick, Giles, Highland, Montgomery, Page, Roanoke, Rockbridge, Rockingham, Shenandoah and Warren counties. TWO OF EITHER SEX. *except Gathright

November 13 - December 31 In Albemarle, Amelia, Amherst, Appomattox, Bedford, Bland, Brunswick, Buckingham, Campbell, Caroline, Charlotte, Chesterfield, Culpeper, Cumberland, Dinwiddie, Essex, Fairfax, Fauquier, Fluvanna, Franklin, Goochland, Grayson, Greene, Greensville, Halifax, King and Queen, King William, Loudoun, Louisa, Lunenburg, Madison, Mecklenburg, Nelson, Nottoway, Orange, Pittsylvania, Powhatan, Prince Edward, Prince George, Prince William, Pulaski, Rappahannock, Russell, Smyth, Spotsylvania, Stafford, Tazewell, Washington, and Wythe Counties. GOBBLERS ONLY.

CLOSED TO FALL TURKEY HUNTING (open during spring gobbler season).

CLOSED TO ALL TURKEY HUNTING

SQUIRREL

MILITARY AREAS

A.P. HILL - September 15 - October 31, November 13 - January 31

CAMP PICKETT - October 15 - January 31

QUANTICO - October 1-14, November 13 - January 31.

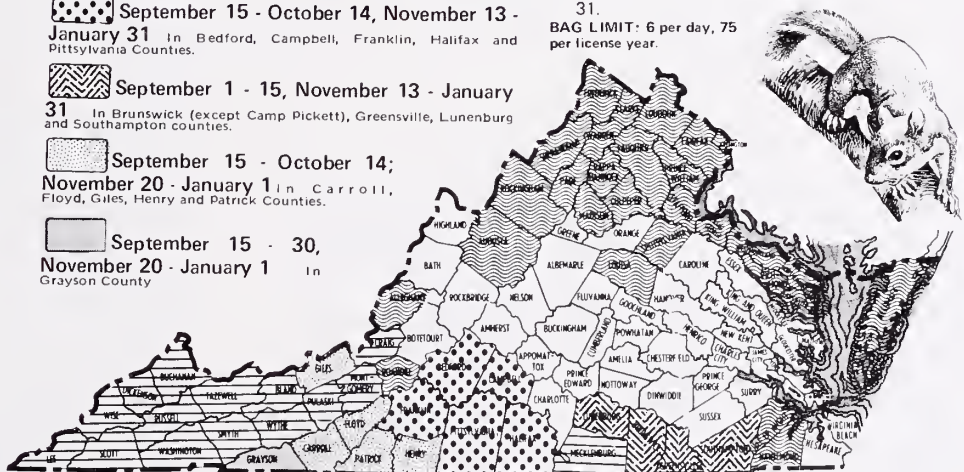
BAG LIMIT: 6 per day, 75 per license year.

September 15 - October 14, November 13 - January 31 In Bedford, Campbell, Franklin, Halifax and Pittsylvania Counties.

September 1 - 15, November 13 - January 31 In Brunswick (except Camp Pickett), Greenville, Lunenburg and Southampton counties.

September 15 - October 14; November 20 - January 1 in Carroll, Floyd, Giles, Henry and Patrick Counties.

September 15 - 30, November 20 - January 1 In Grayson County



October 2-14, November 13 - January 31 In Accomack, Alleghany, Augusta, Clarke, Culpeper, Fairfax, Fauquier, Frederick, Isle of Wight, King George, Lancaster, Loudoun, Louisa, Madison, Nansemond, Northampton, Northumberland, Page, Prince William, Rappahannock, Richmond, Roanoke, Rockingham, Shenandoah, Spotsylvania, Stafford, Warren and Westmoreland Counties.

September 15 - 30, November 13 - January 31 In Bland, Buchanan, Craig, Dickenson, Lee, Mecklenburg, Montgomery, Pulaski, Russell, Scott, Smyth, Tazewell, Washington, Wise and Wythe Counties.

November 13 - January 31 In Albemarle, Amelia, Amherst, Appomattox, Bath, Botetourt, Buckingham, Caroline, Charles City, Charlotte, Chesterfield, Cumberland, Dinwiddie, Essex, Fluvanna, Gloucester, Goochland, Greene, Hanover, Henrico, Highland, James City, King and Queen, King William, Mathews, Middlesex, Nelson, New Kent, Nottoway, Orange, Powhatan, Prince Edward, Prince George, Rockbridge, Surry, Sussex and York Counties and in Hampton, Newport News, Chesapeake and Virginia Beach Cities.

Growth Rates of Shenandoah River Bass

Smallmouth bass take about four years to reach 12 inches in length.



ALTHOUGH the growth rate of Shenandoah River smallmouth bass remains good compared to recorded growth rates of the species in other streams, it apparently has declined slightly over the past several decades, while the percent of the Shenandoah smallmouth population surviving long enough to reach the 12-inch and larger size classes has decreased to about one-sixth of what it was once known to be.

The ages and growth rates of 293 Shenandoah River smallmouth bass were investigated during 1965, 1966, 1967 and 1971 by a study of annual ring formation in the scales. In addition, a similar look was taken at the growth rate of twenty largemouth bass captured October 15, 1971, by electrofishing for one hour at Locke's Mill on the Main Stem.

The smallmouth specimens were collected both by angling and by electrofishing. Scales were removed from an area on the sides of the fish several scale rows above the lateral line and in front of the dorsal (top) fin. Before mounting the dried scales, in glycerin jelly⁽¹⁾ on microscope slides, they were soaked in water for about twenty minutes and the mucus removed by brushing with a small brush or by scraping gently with a one-half spear dissecting needle. The method of determining age and growth rate from scale examination is explained in the accompanying "box."

Results of the Study⁽²⁾

Sixty-nine South Fork smallmouth bass captured by angling in the section from Compton to Karo Landing in 1965 had grown to an average length of about four inches (3.91) during their first year, 7.6 inches in their second year, and 8.9 inches in their third year.

In this same area of the South Fork during 1966 a sample of 55 bass showed that they again had grown to four inches (3.99) in their first year, to 7.9 inches in their second and to 9.9 inches in their third year.

In 1967, again in the same area of the South Fork,

Figure 1 is a diagrammatic sketch of a scale intended to furnish the reader with some idea of how the fish biologist goes about determining the ages of bass. In this sketch the anterior edge of the scale (the area closest to the head of the fish) is to the left; the area to the right of the dotted line represents the exposed part of the scale. This is the part of the scale that is seen in place on the living fish. The larger anterior area to the left is the part of the scale concealed by overlapping scales. Scales overlap like the shingles on a roof, but in bass and other sunfish with ctenoid scales one sees only the rounded posterior area.

As growth progresses, scale growth is outward from the center or focus of the scale. Continuous ridges called circuli are formed in a circular manner around the focus. Many circuli are laid down each year, and generally the faster the growth, the farther they are apart. The year "ring" or annulus is formed as follows: the last few circuli laid down in a given year are incomplete as a result of slowed-down or interrupted growth due to cold weather. Bass are cold-blooded animals and their metabolic rates are greatly reduced, at the approach of winter. In cold water, they consume little food and go into a state of virtual hibernation in the deep pools of the river where they usually conceal themselves under the limestone ledges, in snags, or large boulders in the river bed.

When fast growth resumes in spring, the circuli laid down are again complete or continuous, and the location of the annulus is detected by the presence of incomplete circuli inside of them ("cutting across"). In figure 1, this is illustrated at the points where Annulus 1 and Annulus 2 are labelled. In the figure, the circuli between Annulus 2 and the anterior margin of the scale have been omitted.

Since the growth in length of the scale is directly proportional to the growth in length of the fish itself, the growth in each of the years between the annuli can be back calculated. For example, a 11.9 inch bass, 3 years old, made 40 percent of its

⁽¹⁾ Glycerine-jelly Scale Mounting Medium (after VanOosten, 1929): 850 ml. distilled water, 250 ml. glycerine (liquid), 8 oz. U.S.P. gelatin, few drops of phenol (carbolic acid). Heat water and dissolve gelatin in it. Add glycerin and few drops phenol. Allow to jell and keep loosely stoppered in Erlenmeyer flask in refrigerator when not in use.

⁽²⁾ Recorded data and back calculated growth increments related to age for each specimen examined appear in tables accompanying Federal Aid Projects Document F14S dated May 25, 1972.

By EUGENE W. SURBER
Research Biologist



Largemouth bass appear to grow faster than smallmouths in the Shenandoah.

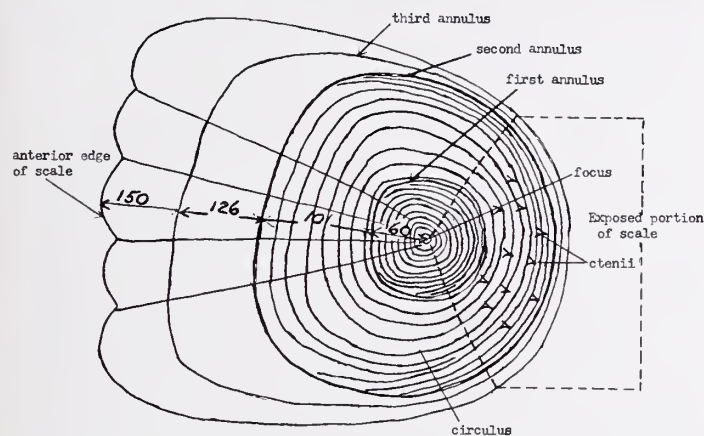


Figure 1. Ctenoid Scale of a Smallmouth Bass 11.9 inches long and 3 years old.

growth to date of capture the first year, 67.3 percent the second, and 84.0 percent in the third year. In inches, this amounted to 4.76, 8.01, and 10.0 inches, respectively, in its first, second, and third years. The fish was taken by electrofishing July 7, so it was well into its fourth growing season.

Figure 1 is used to illustrate how the above figures are determined. In the laboratory in a "scale machine," the scale sample is projected on a screen to a size about 20 times its natural size. Measurements made with a ruler graduated in millimeters (mm) showed the distance from the focus or scale center to the first annulus 60 mm; to the second annulus 101 mm; to the third annulus 126 mm. The distance from the focus to the anterior edge of the scale was 150 mm. The fish was taken July 7, 1971, when about half of the 1971 growing season had passed. The distance from the focus to the third annulus was 126 mm, representing 84 percent of the total growth or 10 inches ($11.9 \times 0.84 = 9.996$ inches). At the time of the formation of the third annulus, then, the fish was 10 inches long. In 1971, it had grown an additional 1.9 inches between April and July 7.

the average growth of 99 smallmouth bass in their first year was 3.71 inches, 7.63 inches in the second year, and 9.66 inches in the third year. The average calculated length of ten 4-year-old bass was 11.4 inches.

During 1967, in a section of the North Fork between Stonewall Mill and Swope Hollow Bridge near Maurertown, smallmouth bass (26 specimens) were growing at a slower rate. Year-old bass averaged 3.6 inches, two-year-olds 6.8 inches, and three-year-olds 8.8 inches.

During 1971, the growth rate of 44 smallmouth bass collected by electrofishing and angling in all parts of the Shenandoah—North Fork, South Fork, and Main Stem—showed an average growth of four inches (3.99) the first year, 7.5 inches the second year, and 10 inches (9.98) the third year. One-year-old North Fork bass averaged 4.6 inches in length, but this does not prove much since the scales of only ten were studied.

In general, it is concluded that Shenandoah River smallmouth bass are 4 inches long at the end of their first year, about 7.5 inches long when two years old and about 10 inches long at the end of their third year. There was little difference in the growth rates of 1965, 1966, 1967 and 1971 smallmouth bass.

Largemouth Bass

Twenty largemouth bass (and no smallmouth bass!) were taken October 15, 1971, in one hour of electrofishing at Locke's Mill on the Main Stem of the Shenandoah River about five miles above Castleman's Ferry. As mid-October is near the close of the growing season, the lengths of nine young-of-the-year bass (0 years) were averaged with the growth increments for the first year of the one-year-old bass. Average length of first-year fish was 4.9 inches, nearly an inch (0.9) more growth than the average Shenandoah River smallmouth bass. Two- and three-year-old largemouth bass were also nearly an inch (0.9 inch) longer than smallmouth bass of comparable age.

This small sample of scales suggests the need for additional study of Shenandoah largemouth bass to determine if they really are growing faster than smallmouth bass in the same stream, and whether this indicates that largemouth bass may be replacing smallmouth populations in the Shenandoah, and, if so, why. (more)

Comparison of Growth Rates of Shenandoah River Bass With Others

Sanderson (1958) observed that Potomac River smallmouth bass in Frederick County, Maryland, grew to an average total length of 4.2 inches in their first year; to 7.4 inches by the end of their second year; and to 9.8 inches in their third year. The Potomac River is almost identical with the present Shenandoah River rate of growth of smallmouth bass. Potomac River largemouth bass farther downstream in Montgomery County averaged 4.9 inches their first year, 7.6 inches their second year and 9.9 inches their third year.

Lowry (1953) observed that the Missouri state-wide average growth rate for smallmouth bass was 3.2 inches the first year, 6.9 inches the second year and 9.9 inches the third year based on 1,385 fish captured in the Black, Current, Gasconade, Meramec, Niangua, Pomme de Terre, Sac, St. Francis and White Rivers in the years 1946-1950.

Surber and Seaman (1949) prepared graphs showing the average growth rate of smallmouth bass, based on fork lengths, collected in the South Branch of the Potomac River near Romney, West Virginia, and in the Cacapon River near Largent, West Virginia. In 1936 and 1938, South Branch smallmouth reached an average fork length of about 3.4 inches the first year, 6.1 inches the second year, and 8.2 inches the third year. In this same area in 1947 and 1948, average rates were 3.8 inches the first year, 6.4 inches the second, and 7.9 inches the third year. These were considered slow growth rates since it required five years for bass to reach the then legal size of a fork length of 10 inches. In the Cacapon River near Largent, much the same situation existed with growth rates as follows: in 1938, 3.3 inches the first year, 5.7 inches the second, and 7.6 the third year. In 1947, 1948, in the same area, smallmouth bass grew about 4.0 inches the first year, 6.5 inches the second year and 8.2 inches the third year. They reached 10 inches in length late in their fourth year.

In 1935, age determinations were made on 171 smallmouth bass taken by hook and line in the Main Stem of the Shenandoah River between Tilthammer Mill and Castleman's Ferry. Of these, 20 percent were between 12.2-12.9 inches fork length, and 44.5 percent of all fish were 12.0 inches or more. This phenomenal fishing made an ardent fisherman out of the author, and a fishing widow out of his wife, but he had to fish for six years before he caught a smallmouth bass weighing four pounds!

Unfortunately, a different method of determining ages was used. It is called the size-frequency method, described by Lux (1971) in a recent publication. The method does not involve back calculation of growth increments. During 1935 it was observed that 94 percent of all three-year-old smallmouth bass were ten inches

(fork length), or more, in length.

The average size of all 1965, 1966, 1967 and 1971 three-year-old smallmouth bass was 9.5 inches total length.

It is clear that the growth rate of Shenandoah smallmouth bass has slowed down since 1935, but it is still good when compared with growth rates for the species elsewhere.

The remarkable change is in the number of bass 12.0 inches or more in length. Where 44.5 percent were 12.0 inches or more in length in the Main Stem of the Shenandoah in 1935, in the years 1965-71 of this study, the percentage of 12-inchers or better taken by angling and electrofishing in the South Fork, North Fork, and Main Stem was only 6.6 percent. Of those smallmouth bass 10 or more inches in length during 1965-71, 20.7 percent were 12 inches or more in length.

Where are the 12-inchers, and why are there so few? Since 1935 the human population of the Shenandoah Valley has increased by 50% (169,335 to 254,298), and this has not only affected fishing pressure but has altered the whole ecology of the river system. It is taking four or more years to grow most 12-inch smallmouth, and not many are now reaching this ripe old age.

The lack of larger smallmouths is detrimental to the whole Shenandoah fishery because the species is carnivorous, and if there are enough large predators they can help control such rough fish as the eastern redhorse sucker that, along with white suckers, hogsuckers and carp, make up about 70 percent of the weight of all fish now taken by electrofishing. They can also control the numbers of their own kind, thereby preventing slow growth rates. Should largemouth bass replace established smallmouth populations and achieve faster growth rates in the same waters, they undoubtedly could perform the predator function just as well or better than the smallmouths have, although many devoted smallmouth bass anglers would prefer not to see such a development on the Shenandoah where the smallmouth has long reigned supreme.

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CHECK STATION

By IRVINE D. PRATHER

Blacksburg

EVEN before dawn the sky foretold bleakness; ten hours of greyness at best. But on this day, the last of the deer season, weather lost its ability to affect my spirits. I was on my way to the Dismal Creek Wildlife Management Area to assist in operating the deer check-in station located there. Each year the Virginia Commission of Game and Inland Fisheries allows students of Wildlife Management at Virginia Polytechnic Institute and State University an opportunity to participate with actual in-field data collection, a chance to learn some of the techniques and problems involved, and, hopefully, a chance to contribute.

I arrived at the check-in station shortly after dawn. The manager, Dave White, had been there for hours. He greeted me with a wide smile and a friendly handshake. His features were weathered to that ruddy state associated with healthy outdoorism, and his eyes held the sparkle of enthusiasm. Throughout the day I was amazed at the number of people he knew, and the number who knew him. Hunters from up and down the East Coast seemed to be his intimate friends. He was the wildlife manager, their ear for bragging and source for knowledge.

I didn't have long to wait until deer began to arrive at the station. They came on and in every type of vehicle imaginable, but each was accompanied by the beaming smile of a proud hunter. Each deer was accurately weighed and aged and, at this station, heart girth measurements (the circumference of the dressed deer's chest) were taken. It is hoped that some correlation between heart girth and weight may be evidenced, thus eliminating the necessity for a scale in the field.

Hunters, more than anyone, know that appearances can be deceiving, and what had been our humble shack became the hub of activity. Hunters checked their deer, remained to compare it with others, and returned later to see if the status of their trophy had changed. Local residents stopped to check the pulse of the day and offer yet another sage comment concerning the art of deer hunting. Tales were told, stories were swapped, the biggest deer was seen and reseen, and Dave's experience was constantly probed. His expert age determinations (made by a knowledge of tooth replacement and wear) continued to mystify each new audience. Dave was never too busy to stop and explain the method to any inquirer.

During slack periods all hands turned toward the fire barrel. It demanded to be fed and crackled its



Our humble shack became the hub of activity throughout the day.

warming response. These were the times when fingers thawed and coffee was sipped: my chance to ask questions. Dave remained congenial and informative. Between reflective tugs at his chin he told me how the data we collected was consolidated and used to understand how the deer population was changing. This subject, known as population dynamics, enables harvest regulations to be set so that the deer herd remains at a size compatible with its range. If too few deer are taken, there may not be enough food for all. If too many are taken, the amount of recreation afforded the public next season will be diminished. Between these two consequences lies the critical balance which Dave White and his associates maintain.

Warming time and question time was short. Another truck approached, more data to be collected, another story to be heard. And the day progressed: weighing, aging, recording; working, listening, learning.

Sometime, long after the sun had said its final farewell, the stream of hunters trickled, then stopped. The last deer was weighed, the last record filled out. Everyone was tired. Everyone was satisfied. Everyone decided we should do it again next year.

Dave was never too busy to explain to hunters how he aged deer.



EDIBLE NUTS

By ELIZABETH MURRAY
Charlottesville

Illustrated by Lucile Walton

AUTUMN, all over the temperate regions of America, is essentially a season for harvesting. Most of the flowers are over. Now is the time for gathering fruits, berries and nuts, and either eating them on the spot or else preserving and storing them away for the winter. Members of the blackberry tribe usually ripen earlier in the summer although this year, owing to the cold spring, the blackberries were very late. In the mountains of the southwestern part of the state we were picking them into late August. Blueberries and huckleberries were ripening all through August and September. I must usually wait until October before picking the little wild grapes which grow along the river below our house and which make such delicious jelly. By November there is not much to do in the woods except to wait for the "pucker" to decrease in the persimmons, and to gather nuts, trying to beat the squirrels at their own work.

Wild nut gathering has changed radically in North America over the last century. Fifty years ago one of the main trees of mixed deciduous woods was the American chestnut, *Castanea dentata*, a member of the family Fagaceae which includes, as well as the chestnuts, the beeches and the many oaks. The chestnut was a large, rough-barked tree which could reach 90 feet in height. The leaves were pointed oblongs with serrations down the sides. The nuts, often two or three together, flattened on one or both sides, were contained in a prickly involucre known colloquially as the chestnut "bur". Chestnuts formed an important food for the American Indian who either ate them as a vegetable, cooked them into his corn bread, or roasted them and used them to make a hot drink. Early American settlers used American chestnuts in many of the ways practiced in the Old World with *Castanea sativa*, a closely related species with a delicious nut. Using the ground-up nut as flour, bread and fritters can be made; the chestnuts can also be eaten as a vegetable or used with stewed meats. In my childhood home in England we always stuffed the Christmas turkey with chestnuts and crumbled up more, lightly boiled, chestnuts on the accom-

panying dish of Brussels sprouts. Then we had another bag of chestnuts in the living room just for roasting over the open fire during the winter evenings.

The tragic introduction of the chestnut bark disease or chestnut blight has changed the face of the American forests. Apparently coming from China about 1900, it has virtually destroyed all the native chestnut trees. The disease is a fungus, *Endothia parasitica*, which attacks the cambium and cortex cells of the tree. Very rarely one hears reports of mature trees which have been found still bearing nuts. Everywhere else one finds the dead, fallen trunks. Around the old stumps new saplings still sprout but they are invariably attacked by the blight before they are a few yards high.



Chinquapin.

The only other chestnut tree which occurs naturally in our area is the dwarf chestnut or chinquapin, *Castanea pumila*. This is largely a southern tree, more frequent in the mountains but occurring sparsely in dry woods and thickets from Florida to Texas and north to New Jersey with occasional localities in New England. It is a small tree, sometimes more of a spreading shrub, with multiple stalks or trunks. Like all members of the Fagaceae it is monoecious, that is, the male and female flowers are separate but occur on the same plant. The male or *staminate* flowers grow in a long spike 3-6 inches long and have a strong scent. The female or *pistillate* flowers are small and inconspicuous. The bur, about one inch in diameter, usually contains

a single sweet nut, rounded rather than flattened like the American chestnut. The nuts ripen in late fall and are generally eaten raw. Miss Walton, who has drawn the pictures on these pages, describes the flavor as similar to that of a honeydew melon, not quite ripe. The American Indians made a sort of chocolate from chinquapins which was supposed to be "not much inferior to that made from cacao." Chinquapins are not nearly as common as American chestnuts were in their heyday and are considered rather a rare treat amongst those who enjoy wild food.

Another tasty nut is the hazelnut, produced by two species of the genus *Corylus* belonging to the Corylaceae, the family which also includes the birches. Hazels are shrubs about 9 feet tall with thin toothed leaves, the nuts enclosed in leafy cups formed from much enlarged bracts. The nuts ripen in late fall and are really best eaten raw—just as nuts! Hazelnuts are found in the mountains around here but are commoner farther north. Their range extends from Georgia up into Canada, west to Saskatchewan in the north and Oklahoma and Missouri further south. The Greek word *corys* means helmet, and the generic name refers to the shape of the nuts' covering.

Walnuts, butternuts (or white walnuts) and hickory nuts all belong to the walnut family or Juglandaceae and all are edible. The walnuts are distinguished from the hickories by the seamless husk which covers the nut and does not crack away from the mature nut. The husk of hickories when mature cracks into four valves exposing the smooth-shelled nut. Confusingly, *Carya*, the generic name for hickories, is the Greek word for walnut, while *Juglans*, the generic name for walnut, comes from *Jovis glans*, the nut of Jupiter. The fruit of the butternut, *Juglans cinerea*, is elongate and the husk is covered with short, sticky hairs. The black walnut, *Juglans nigra*, is round and smooth.

Nuts of this family can all be eaten raw or ground up and used in bread and cake, but the Indians also used them in many other ways. In particular, they extracted oil from them by pounding them up (shells and all) and boiling the pieces. The oil skimmed from the surface was spread like butter on bread and vegetables, preserved for future times, or even used as hair oil. The next layer to be skimmed off after the oil contained the nut meats, which could either be used immediately or dried into hard cakes and stored for the winter. The shells remained at the bottom of the boiling vessel and were discarded.

Young black walnuts can be pickled, husks and all, a practice dating back to colonial times and probably introduced from England, where in some places pickled walnuts are still popular. The juice of walnut husks stains fingers and clothes indelibly. Hardened walnut users do not attempt to remove the husks by hand but leave the walnuts in a large damp pile until the

husks rot off them naturally. Another solution is to spread the walnuts across your driveway and drive over them every time you take the car out. Those who enjoy Gilbert and Sullivan's light operas will remember that one of the Mikado's efforts to "make the punishment fit the crime" was to take the lady who used makeup too freely and treat her with "permanent walnut juice."

The hickories fall into three main groups. The familiar pecan is a tree almost exclusively of the Deep South and has a nut which is sold commercially everywhere. The bitternuts or pignuts are often as bitter as the name suggests. Finally, the sweet hickories, including the shell-bark or shag-bark and the mockernut, all have delicious nuts. I make a solid fruity bread



Hazelnut.

from the persimmons which grow round us, and in it I like to put nuts from the *Carya tomentosa* or mockernut which grows on the old family graveyard of our house. However, it does take a long time to crack and extract enough, and often the squirrels have beaten me to the crop, so that I have to go to the store and tamely buy my nuts.

These are only a few of the palatable nuts which can be found in the woods towards the end of the year. It takes real dedication to seek out and prepare attractively all the things which really enthusiastic wild food gathers say you can eat. But for those of us who wander about in the late fall woods with just a casual eye open for edibles, chinquapins, hazelnuts and members of the walnut family make a very good beginning.

Know Your WARDENS

Text and Photos by F. N. SATTERLEE
Information Officer

CHARLES N. HUNTER
*Assistant Supervising Warden
Hampton Roads District*

Following graduation from Surry County Virginia High School, Charlie Hunter worked at the Navy Yard in Portsmouth, Virginia, for 3½ years. Then he enlisted in the U.S. Army and spent the next two years, June 1944 to July 1946, with the 34th Infantry Division. Most of his service was overseas in Italy where he participated in the two Northern Campaigns for which he was awarded two Battle Stars. He also received the Purple Heart.

Charlie returned to the Navy Yard after discharge with the intention of going back to work there but changed his mind about working inside in an office and turned down his old job. Shortly afterward he learned that there was to be an opening for a Game Warden in Surry County, applied for the position and was accepted.

Charlie was promoted to Area Leader in November of 1966 and to his current position of Assistant Supervising Warden, Hampton Roads District in February of 1972. He enjoys and believes in his work especially since it is working in the outdoors and with people. His very special interest is the younger boys and girls. Seeing these youngsters grow up into responsible citizens is a continuing source of satisfaction to him.

The former Evalyn Richardson from Prince George County is Mrs. Hunter. The couple have two daughters and they make their home in Surry Court House, Virginia.



RALPH G. HOLDAWAY
Game Warden, Northern Virginia Metropolitan Area



Ralph Holdaway was born in Grayson County, Virginia, and following graduation from high school served four years in the Medical Corps of the U. S. Navy. In 1959 he moved to Richmond, Virginia, where he worked for the city as a laboratory technician. In 1961 he was recalled to active duty in the Navy in connection with the Cuban crisis. Following his release Ralph joined the Game Commission as a warden in 1964. His original assignment was to Culpeper, Virginia, and he was later transferred to the northern Virginia area where he is currently assigned.

One of the most satisfying aspects of his work as a warden is the opportunity to be outdoors and to work with people, especially children. Another is the very area of his responsibility for it is interesting and a complex mixture of urban sprawl, suburban development and farmland all rolled together.

Ralph is the immediate past president of the Arlington-Fairfax Chapter of the Izaak Walton League of America and is active with both the Northern Virginia Regional Park Authority and the Fairfax County Park Authority. He is married to the former Mary Denyer of Washington, D. C. The couple have four children and make their home in Herndon, Virginia.

By JOHN W. TAYLOR
Edgewater, Maryland

*Bird
of the
Month:*

STRANGELY, the gadwall is the most mis-identified of our wildfowl. Strange, because it is the only one of our ducks with a white speculum (the secondary wing feathers) and can thus be readily recognized in any plumage. This feature is not usually noticeable when the bird is at rest or swimming, but it is quite prominent in flight, and, of course, it can be easily checked when the bird is in the hand.

Yet many hunters confuse the females of the widgeon (or baldpate) and pintail, with gadwall of both sexes, calling them indiscriminately "grey ducks." All three have distinctive anatomical as well as coloration characters, and can be known even in silhouette.

The gadwall is slimmer and smaller than the mallard (which accounts for its confusion with the hen pintail) and it flies with faster wingbeats than the heavier duck. The drake has a rich chestnut patch on the forewing, and the black undertail coverts contrast with the white belly. His consort lacks the chestnut and the black at the base of the tail, but can be told by the white speculum. Seen close enough, the yellow-orange legs are an important character to note; only the wood duck would have similarly colored feet.

The gadwall is distributed widely, but unevenly. Nearly cosmopolitan, it is found on every continent save Australia and South America. Its main concentrations seem to be in Asia where in places it is extraordinarily abundant. In North America it is curiously irregular and local. It finds preferred spots and returns to them annually, while completely forsaking similar habitat nearby.

In Virginia, this trait is particularly in evidence. Small flocks are liable to occur anywhere in Tidewater during the fall and spring migrations, but they are nowhere common. Wintering birds also are sporadic in occurrence, with an apparent preference for brackish water. But there is one section of the lower Potomac, the stretch in Westmoreland County, where they winter regularly and in good numbers. The presence of a favorite food may account for this concentration.

The nesting range of the gadwall is rather southerly, for a waterfowl species, and is becoming more so. Until recent years it was thought not to breed south of Ohio, but in the late forties it was found nesting in the Maryland portion of Delmarva, and small numbers have bred there each year since. The presence of summering birds at Chincoteague Refuge indicates breeding, and there must be definite records of nesting in Virginia.

Tidal salt marshes, which cover both the Bay and ocean sides of the peninsula, are preferred for nesting in our latitudes, and there are likely breeding birds in both of Virginia's Eastern Shore counties.



Gadwall

dug in the ground and camouflaged with a fragile covering. When an animal fell into the pit, it was killed by spears, stones or whatever else was handy. Sharpened stakes were likely added later as a refinement. These primitive traps are still used in some remote corners of the world today. This was probably the first "killer trap."

Sometime after the pitfall was first used, deadfalls and snares were developed. Which came first is not known for certain.

Various types of snares were used. Some were hidden along trails where an animal would become entangled in them and later killed by the trapper. Others were fastened to spring poles that pulled the trapped animal into the air. Snares were later refined using steel cable and non-slip locks that would become tighter as the animal struggled.

Deadfalls were lethal killer traps. These were made by suspending heavy weights such as logs and rocks, holding them in position by means of ingenious triggers, such as the well known "Figure 4." When an animal would take a bait the weight would collapse upon it, killing it.

The leg-hold steel jaw trap was developed a little over 200 years ago. They were first made commercially in the United States in the 1850's. Since their development, steel traps have been the primary tool of the American trapper. Over the years they were refined, classed by sizes and produced in more compact, easier-to-conceal models. Some were produced with extra jaws and special spring-loaded guards to prevent animals from escaping. For the most part, however, the steel leg hold jaw trap has been little changed since it first appeared two centuries ago.

As rural areas became more crowded and the safety of pets and livestock, regarding the use of killer traps, became a matter of concern, snares, deadfalls and pitfalls were outlawed in many states. The leg-hold trap was recognized as the safest trap for general use in populated areas. Domestic animals accidentally caught in steel traps could be released. Killer traps were simply too destructive.

After the end of World War II trappers saw the first significant change in trapping hardware since the development of the "Stop-Loss" steel trap. This was the Conibear, a compact steel killer trap that proved to be the most efficient trap designed so far for taking many species of furbearing animals.

The Conibear has proven to be excellent for "run" and "den" sets for muskrats. It is also efficient for use with baits for other unwary animals such as skunks and opossums. In large sizes the trap is highly praised by beaver trappers. Most trappers agree that the Conibears are fine traps to use in many situations encountered on the trapline.

Unfortunately, killer traps are not the best type to use at muskrat feed beds or for larger upland furbearers such as foxes. The killer trap that would kill a fox would also kill a dog. Smaller models that kill skunks and possums will kill small dogs or cats.

Smart trappers have developed means of placing steel traps where a fox will step on it but a dog, attracted to the same bait, may not. Such sophistication is almost impossible with a killer trap. Besides, from the trapper's point of view, the large killer traps are difficult to conceal at bait sets, where most foxes are caught. When attracted to bait, a fox approaches it warily and a trap must be well concealed. Steel traps are buried under a half inch of earth. A killer trap cannot be concealed in this manner.

The most effective way to use a killer trap on a smart animal is on trail sets where the animals are less on their guard. But trail sets are seldom sufficiently safe to ensure against catching someone's pet or hunting dog. It is for these precise reasons that killer snares and deadfalls were outlawed in many states years ago.

Recently, interests who are against the taking and wearing of fur for any reason, have been successful in having introduced in Congress legislation that would outlaw interstate and foreign commerce in furs from states or countries that have not outlawed the use of steel leg-hold traps.

A nationwide campaign is underway to "educate" the public, telling us that the steel trap is cruel and the killer trap is the panacea that will deliver a swift and merciful end to all furbearers.

While no one could dispute the effectiveness of killer traps in certain situations, nothing has yet been developed that is as versatile as the standard steel leg-hold trap that is still in worldwide use.

Some trappers argue that an animal experiences relatively little pain in a steel trap. It is said that the trapped foot soon becomes numb and pain is not as great as one would suspect. Yet no one can deny that both killer traps and steel traps can cause pain. Trappers will tell that it is not impossible for trapped animals to hit a killer trap in such a fashion as to later escape.

If the restriction to killer traps is enforced, however, the fur harvest will drop, particularly as it relates to the more wary animals. This will result in overpopulations in some areas with the consequences being ultimately much more painful and prolonged than a few hours in a steel trap. Worse yet, the toll of domestic animals killed by trappers will climb. The trappers don't want this to happen any more than the pet owners. But while we're about it, as long as we're bringing killer traps back, don't forget to bring back the deadfall and the snare. Then we can truthfully say we've come around the full circle.



Edited by HARRY GILLAM

Beginner's Luck



A. Guerry Higgason caught this 9 pound 4½ ounce largemouth from a pond near his home in Aylett. His wife reports that he has just recently taken up fishing and has only fished for bass for about 3 months. After a prize like this, what does a fellow do for an encore?

Virginia Tract Proposed As Wilderness Area

President Nixon has asked Congress to approve 16 new Wilderness areas, one of which would be located within the Cumberland Gap National Historical Park which lies in Virginia, Kentucky and Tennessee. Three other of the areas would be located east of the Mississippi on existing National Wildlife Refuges. All in all, 3.5 million acres would be added to the wilderness system under this proposal, most of it involving re-designation of lands already owned by the government in national parks, monuments, refuges, etc. Most of the acreage is in the West.

The wilderness system now includes some 9.1 million acres and yet another 4.1 million acres is being considered in other legislation before congress.

Big Game Trophy Book

Evaluating Big Game Trophies is the name of a new booklet just published by the Commission of Game and Inland Fisheries in cooperation with the Virginia Peninsula Sportsmen's Association and the Harrisonburg-Rockingham Izaak Walton League, lo-

cal sponsors of the annual Big Game Trophy Contest. The booklet begins with a history of the Big Game Trophy Contest and includes a listing of all heads which have placed in each class since 1941. Complete instructions are given for measuring heads under the Virginia system and the Boone and Crockett system with sample application blanks for each. Also included is a detailed discussion of antler growth and development with notes on different areas of Virginia and their trophy potential. Copies of the booklet, which is to be revised annually, will be available at the two regional Big Game Trophy Contests each year and from the Game Commission's Richmond office.

Lake Gaston Fishing Guide

**BASS STRUCTURE FISHING
LAKE GASTON**



At last! The secrets of how to catch fish in Virginia's hottest bass lake have finally been wrapped up in the new Alexandria Drafting Company publication, *Bass Structure Fishing on Lake Gaston*. In addition to the 12 pages of detailed contour maps, a must for the serious Gaston fisherman, the book contains fishing tips from a variety of experts including local bassmaster Larry Compton whose lead article

"How to Lure Lunkers from Lake Gaston" should help any angler put his lure right in a big one's mouth. Other informative articles cover the use of bass boats, fish locators, plastic worms and other lures.

The detailed contour maps made up from aerial photography completed before the lake was impounded make it possible to read the bottom like it was a three-dimensional picture. Each 10 foot contour interval is indicated by a different color, making it easy to separate water depths. Underwater humps and holes show up clearly. Old woods lines indicate where stump beds may be found. Creek channels, drop-offs and other underwater features are easy to find. As a bonus for the fisherman, camping areas, boat ramps, marinas and related facilities are also shown. Copies are available at most local sporting goods dealers or from the publisher, 417 E. Clifford Ave., Alexandria 22305, at \$3.50 each.

Complete Set of Forest Maps Available

A complete set of maps covering the George Washington National Forest has been completed showing forest boundaries, contours, access roads, streams, campgrounds and other facilities of interest to the outdoorsman. Printed in four colors, the maps are easy to read and understand. Each map includes one ranger district and has a write-up on the reverse side explaining forest policies, regulations and programs. Since the Broadway district has been combined with the Lee and Dry River districts, there are only six maps in the series. In addition to the two already mentioned there are the Deerfield, Warm Springs, Pedlar and James River districts. The maps are available from Forest Service offices and from the Game Commission's Richmond office. Those requesting maps should specify which ranger district they want.

ON THE WATERFRONT



Edited by JIM KERRICK



Evinrude Motors photo

Check to be sure the anchor line is secured to the boat, then lower, don't throw, the anchor slowly into the water.

No Matter What Shape Your Boat's In, Good Anchor is Necessary For Safety

No matter whether your boat is heavy or light, long or short, or old or new, your boat needs a good anchor. The selection of a good working anchor is a necessity for safety in boating. It's merely an old tale that a bucket filled with cement or a concrete block will do a sufficient job, even with their lack of holding power. On a stormy day, these home-made anchors will not keep a boat from drifting.

It is recommended that a Mushroom or Danforth anchor be used as they are nearly as cheap as a bucket filled with cement. The mushroom is particularly suited for permanent mooring where there's a soft or mud bottom. The Danforth style settles quickly and has good holding power, even on hard sand or rocky bottom. A short, stockless anchor might do the job, but be sure to first check with a marine dealer for recommendations. The type of anchor you need will depend on the size of your boat and the kind of bottom you most

often encounter. Anchors are rated by "holding power," so that the heavier your boat or the rougher the water, the more holding power is required from your anchor.

Another thing to keep in mind when preparing to lower the anchor is the safe ratio of anchor line to depth of water. In moderate weather, the ratio stands at six to one. If you anchor in ten feet of water, for example, sixty feet of line is needed. On the other hand, if there is neither breeze nor current, only half of that is sufficient. The six-to-one ratio, however, is still better for an overnight anchoring or unattended boat.

Here are just a few other important things to remember when anchoring: examine the anchor, checking that the line is secured properly; don't try to be a star shotputter with the anchor, just slowly lower it alongside the boat; have the anchor line coiled clear for running; never stand on or in the coil when letting the anchor drop.

Knowledge In Outboards Urgent

What would you do if your engine wouldn't start? What's wrong if a warm engine won't get going? What's actually happening when your boat is idling rough, and why would a motor act sluggish at full throttle? If you don't know the answers to these questions, well, you've got some learning to do, and all of it should be done before going out with your rig again. Many boatmen are not familiar with the mechanics of an outboard, but certainly should have some basic knowledge of its actions.

Just in case you're one of those who is unsure of himself, here are some basic instructions to help you further understand your outboard. For example, if your engine refuses to start, first check the fuel system. Make sure the tank isn't empty and the fuel lines aren't kinked. Also check to see that the line is firmly connected at both ends and that it's not being pinched under a tank or one of the seats.

If a warm engine won't start, chances are it's flooded. In this case, disconnect the fuel line at the motor, advance the throttle and pull the starter rope several times. Reconnect the line, squeeze the priming bulb and try it again.

To correct rough idling, turn the low speed carburetor setting knob slowly until the engine smooths out. Defective spark plugs and improper fuel mixtures can also cause this problem.

Check spark plugs if your motor is sluggish at full throttle. If they have been fouled or burned, the plugs should be replaced.

While the sluggish mood of the boat may be caused by the plugs, many owners have found that marine growth on the hull can also be a big factor. If this is the case, pull the boat out of the water and clean it immediately. If the marine life is allowed to dry and harden, the job will be twice as hard.

GIVE

Virginia Wildlife

FOR CHRISTMAS



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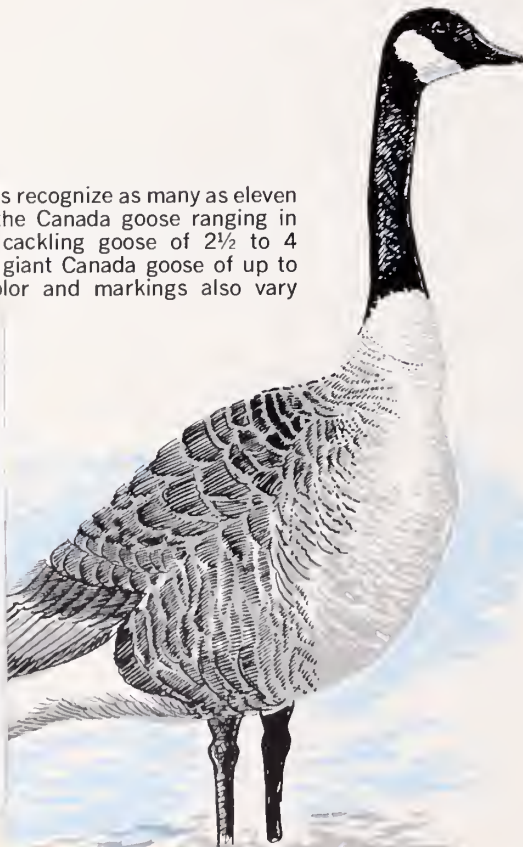
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CANADA GEESE



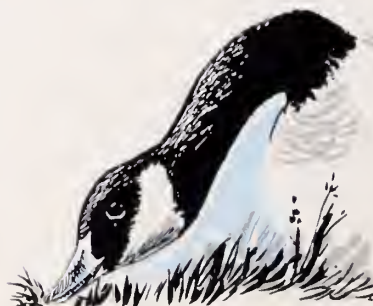
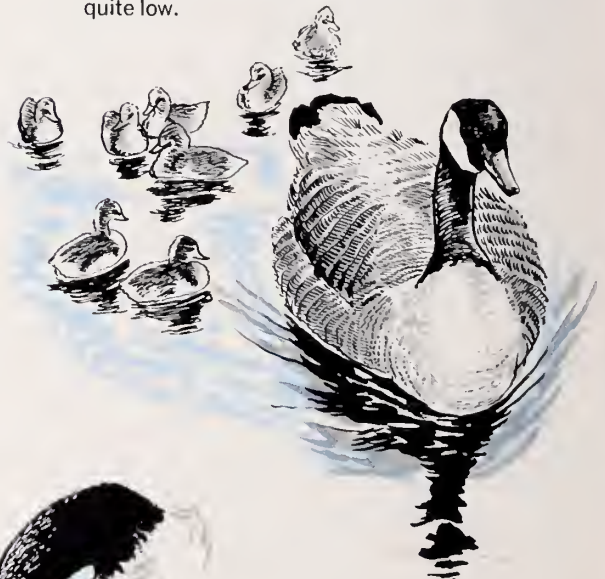
Although the exact reasons for migration are yet unknown, food supplies, instinct, and simple comfort may play important roles in this twice-a-year travel. The Atlantic Flyway Canada goose population has its ups and downs, but has been around an estimated 400,000 in recent years.

Some authorities recognize as many as eleven subspecies of the Canada goose ranging in size from the cackling goose of 2½ to 4 pounds, to the giant Canada goose of up to 18 pounds. Color and markings also vary.



The nesting area covers a wide section of North America from the north-central United States to the Arctic. Often man-made "islands" are used for nest sites.

The goslings are yellowish with gray markings and usually number seven or fewer per brood. The young are tended by both parents and usually rely on open water for security. Hazards to the young are many and the survival rate may be quite low.



Grasses of all kinds, and shallow aquatic vegetation form the basis of the diet of adult geese. Insects, land and water, are eaten, particularly by the young. Of course a meal of corn isn't passed by!